

Celebrating a Century of Plant Exploration

1998 marks the 100th anniversary of the U.S. Department of Agriculture's plant introduction program, one of the oldest continuing activities in USDA.

This year also marks the 50th anniversary of the four Regional Plant Introduction Stations and the Inter-Regional Potato Introduction Station that were initiated by USDA collaboratively with state agricultural experiment stations and are now managed by and jointly funded with USDA's Agricultural Research Service. This year is also the 50th anniversary of the National Small Grains Collection and the 40th anniversary of the National Seed Storage Laboratory.

These are all important components of the National Plant Germplasm System (NPGS) that maintains and distributes plant germplasm acquired from sources all over the world.

Plant germplasm contains all the genetic information for a plant's hereditary makeup. Scientists in the United States and around the world use plants and seeds of the nearly 10,000 species maintained in the system to develop new and improved varieties that underpin national and global food security.

The United States, like most other countries, depends on plants that originated elsewhere in the world for most of its food supply. So scientists everywhere need access to the global gene pool.

The NPGS exists to preserve germplasm of plants that might otherwise be lost or unavailable to these scientists. The more than 20 NPGS sites maintain about 450,000 accessions, each collected at a particular time and place. These include seeds and other

parts of modern and old varieties, wild and weedy relatives of crop plants, and genetic stocks. Genetic stocks are those with induced and natural mutations, cytological (cellular) stocks of genetic oddities, and variations on normal chromosomes, marker genes, and pest-resistant stocks.

Over the century since USDA Secretary James Wilson created the Section of Seed and Plant Introduction, the history of this endeavor has evolved, yet the mission has remained the same: coordinate acquisitions and preserve, characterize, evaluate, and distribute germplasm.

Today, ARS' Beltsville (Maryland) Agricultural Research Center's National Germplasm Resources Laboratory facilitates plant explorations supported by the NPGS. The Beltsville lab also assists curators at the germplasm maintenance sites and other scientists with the exchange of germplasm with foreign countries. Last year, the NPGS distributed more than 108,000 samples of germplasm to over 100 countries.

USDA has always considered genetic resources to be the common heritage of mankind. The department maintains a policy of unrestricted and free exchange of NPGS germplasm to both domestic and foreign users. Congress reaffirmed this policy in 1990 to show the U.S. commitment to germplasm conservation and sharing.

Exploring for and collecting germplasm has always involved international cooperation. Foreign collecting trips are planned and arranged as scientific collaborations between the United States and host countries. Collected germplasm and herbarium specimens are shared between participating countries.

In 1991, ARS created guidelines for ethical conduct during plant exploration trips. The guidelines help protect the natural environment and

ensure that the United States and co-operating countries derive maximum benefit from collecting trips.

In recent years, some countries have voiced opposition to an open and free exchange of germplasm as a global policy because they feel that the benefits derived from the use of germplasm have not been shared equitably.

At the 1992 United Nations Earth Summit in Rio de Janeiro, Brazil, the Convention on Biological Diversity was signed by more than 150 countries. This landmark pact, which became effective in December 1993, established that countries have the right to regulate access to their plant genetic resources and that the sharing of germplasm is to be on mutually agreed terms.

The issues of access to germplasm and benefit sharing from germplasm exchanges continue to be the subject of a long-term negotiation of the International Undertaking on Plant Genetic Resources that is under the auspices of the United Nations' Food and Agriculture Organization (FAO) Commission on Genetic Resources for Food and Agriculture.

The United States hopes that the FAO negotiations will lead to a satisfactory compromise on very complex issues. All countries agree that the current global system can be improved so that all countries can better conserve, use, and benefit from these valuable genetic resources.

Plant exchange will continue to be vital to U.S. agriculture and the national economy. Also, as the global population continues to grow, plants maintained in the NPGS—freely exchanged among scientists around the world—may make the difference between abundance and scarcity, surplus or famine.

Allan K. Stoner
National Germplasm Resources
Laboratory, Beltsville, Maryland